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Notice of Allowability	Application No.	Applicant(s)	
	10/644,997	CHEN ET AL.	
	Examiner	Art Unit	
	Bryan Bui	2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 8/21/2003.
2. ☒ The allowed claim(s) is/are 1-24.
3. ☒ The drawings filed on 18 December 2003 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|---|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date <u>9/13/04</u> |
| 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date <u>091304</u> | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____ |

DETAILED ACTION

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-24, drawn to the methods for automatically controlling the output of continuous processing and indirect methods of determining the amount of gas; and methods of determining the air-free density of a liquid at a static state; determining the gas-free density of a gas-liquid mixture at a dynamic state; methods for determining the gas solubility coefficient for a gas liquid mixture at a static state; methods for controlling the output of a process for preparing a carbonated beverage, classified in class 702 subclass 24.

II. Claims 25-32, drawn to single/ dual core-module apparatus having piping in phase fluids process with pressure gauge, classified in class 73, subclass 23.29.

Inventions of each group I to II are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the single/dual core-apparatus does not a particularly requirement.

Because these inventions are distinct and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.

2. Election was made without traverse by Mr. Richard Gallagher during telephone call on September/13/2004. Mr. Gallagher agreed to select group I (claims 1-24) without traverse for examination.

3. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Richard Gallagher on 9/13/2004.

The application has been amended as follows:

Cancel claims 25-32.

In claim 2:

line 5, delete "c.)", insert therein -b.)--

line 8, delete "d.)", insert therein -c.) --

line 22, delete "e.)", insert therein -d.) -

line 24, delete "f.)", insert therein -e.) --

Allowable Subject Matter

4. The following is an examiner's statement of reasons for allowance:

Claims 1-24 are allowable over the prior art of record because none of the prior art of record whether taken singularly or in combination to teach **the claimed combination**, such require for the methods for automatically controlling the output of continuous processing/ and liquid-gas mixture in a batch mode; and indirect methods of determining the amount of gas; and methods of determining the air-free density of a liquid at a static state; determining the gas-free density of a gas-liquid mixture at a dynamic state; methods for determining the gas solubility coefficient for a gas liquid mixture at a static state; methods for controlling the output of a process for preparing a carbonated beverage, particularly require as: (claim 1) "wherein V is the volume of the gas-free liquid calculated by equation (23)...the amount of gas in the liquid carrier."; (claim 2) "...wherein V_s is determined by equation (33)...raising the amount of gas mixed in the liquid."; (claim 3) "...wherein the volume, V, is calculated from equation (23)...the amount of solids or liquids mixed in step b.)."; (claim 8) "...wherein V_s is determined by equation (33)... $V = (1/p_1) - [(P_2/P_2 - P_1) ((1/p_1) - (1/p_2)) - (RT/C)]$ "; (claim 9) "...wherein V is the volume of the gas-free liquid calculated by equation (23)...the amount of gas being dissolved between P_1 and P_s ." ; (claim 10) "...wherein V is the volume of the gas-free liquid as determined by equation (32)... is the gas solubility coefficient at a static state."; (claim 11) "wherein V is the volume of the gas-free liquid as determined by equation (23) ... is the gas solubility function."; (claim 12) " ...acquiring off-line the true, ... solubility coefficient, $A_0, A_1, A_2, \dots, A_i$."; (claim 13) " acquiring off-line the true,...is the predetermined gas-free liquid density as defined in b.)."; (claim 16) "... wherein V_s is determined by equation (37)....in the sample chamber at P_1 ."; (claim 17)

"...wherein V is the volume of the gas-free liquid as determined by equation (36) ... is the gas solubility coefficient at a static state."; (claim 18) "...increasing the pressure of the sample chamber excessively... T is the liquid temperature."; (claim 22) "...wherein V_s is determined by equation (37)...raising the amount of gas in the liquid carrier."; (claim 23) "...in the carbonated aqueous medium at the standard condition using equation (37) ...raising the volume of carbon dioxide supplied."; (claim 24) "...in the carbonated aqueous medium at the standard condition using equation (37) ...raising the volume of carbon dioxide supplied."

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bryan Bui whose telephone number is 571-272-2271. The examiner can normally be reached on M-Th from 7am-4pm, and Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E Barlow can be reached on 571-272-2269. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BB

9/13/2004

BRYAN BUI
PRIMARY EXAMINER

